

A NEW SPIONID (ANNELIDA: POLYCHAETA)  
FROM THE GULF OF CALIFORNIA

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**ABSTRACT:** *Polydora wobberi* sp. nov., is described from Bahía de San Francisquito on the eastern side of Baja California, where it inhabits burrows bored into the white gorgonacean, *Lophogorgia* sp. It is related to another species of *Polydora* (in press) which is known only as a commensal within the coenosteum of certain hydrocorals from central California to British Columbia, and to *Polydora cavitensis* Pillai from the Philippine Islands.

INTRODUCTION

In May of 1969, several examples of the white gorgonian, *Lophogorgia* sp. (Coelenterata: Anthozoa), were recovered from depths of 6-10 m in Bahía de San Francisquito on the Gulf side of Baja California (lat. 28° 30' N.; long. 112° 50' W.) with SCUBA. This material contained small spionids living in U-shaped burrows along the lengths of short branches which arise from the bases of the coelenterate colonies; these polychaetes were determined to represent a heretofore undescribed species. The specimens were collected by Don R. Wobber, Department of Biology, San Francisco State College, after whom I am pleased to name the new species.

Family SPIONIDAE Grube 1850

Genus *Polydora* Bosc 1802

***Polydora wobberi*, new species**

Figures 1-2

*Type material* — Holotype: California Academy of Sciences, Department of Invertebrate Zoology No. 304. Paratypes: One broken, but complete, specimen, fragments of three other individuals and two egg cocoons, as well as slide mounted material, have been placed in the Allan Hancock Foundation, University of Southern California.

*Type locality* — Bahía de San Francisquito, Baja California, México; from 6-10 m, burrowing in *Lophogorgia* sp.

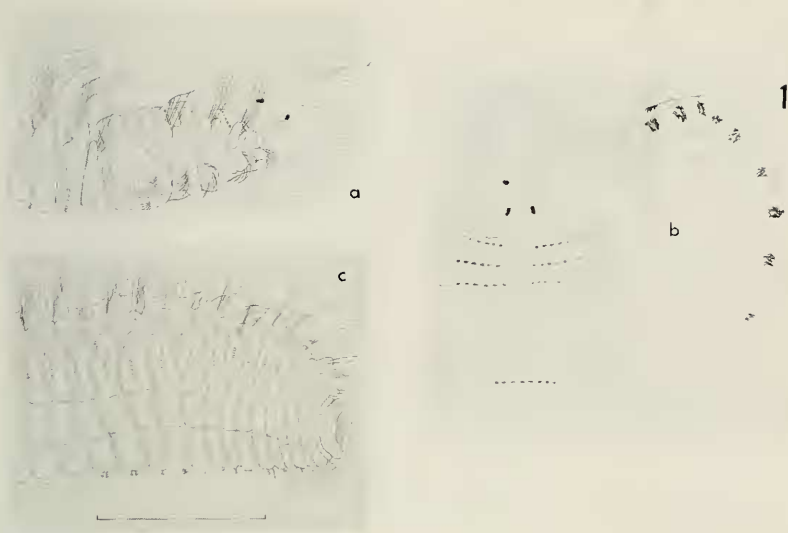


Figure 1. *Polydora wobberi*, n. sp.: a, anterior end, right lateral view, right palp removed; b, same, dorsal view, setae and left palp removed; c, posterior end, left latero-ventral aspect. Scale 1 mm.

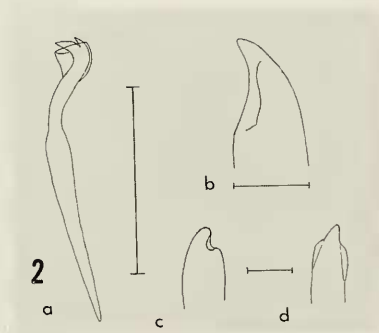


Figure 2. *Polydora wobberi*, n. sp.: a, neuropodial crotchet, lateral view, scale equals 1 mm; b, tip of modified major spine of fifth setiger, lateral view, scale equals 0.02 mm; c, older, worn spine, lateral view; d, younger spine, ventral aspect, scale 0.02 mm.

#### DIAGNOSIS

Peristomium anteriorly prolonged beneath prostomial ridge to form a bluntly rounded leading edge; this anterior margin ventrally produced into a thick fleshy roll of tissue, which sweeps laterally and ventrally to enclose the mouth. Prostomium long, thin, feebly notched anteriorly,

not readily visible against the underlying peristomial projection in dorsal view; caruncle to middle of setiger 4. Modified fifth setiger heavily creased dorso-laterally; modified major spines simple, somewhat falcate, with slight lateral flarings forming a subdistal concavity. A prominent webbing, often pleated, joining adjacent branchiae from setiger 12, continuing almost to pygidium. Body dorso-ventrally flattened in posterior region; sharply attenuated over the last few pre-pygidial segments — closely resembling the caudal end of *Boccardia hamata* (Webster), but lacking stout notopodial hooks (see below). Pygidium a thickened ring, much reduced.

#### EXTENDED DESCRIPTION

The holotype measures 27 mm long by 0.9 mm wide (anterior segments) over 134 segments, and the single complete paratype, 26 mm by 1.1 mm over 137 segments. The widths of the expanded caudal regions are 1.1 and 1.4 mm, respectively.

The prostomium is narrow, high, and faintly notched on the anterior margin. The caruncle rises abruptly to a high dome just over the region of the second setiger and then slopes sharply downward, terminating at about the middle of setiger 4 (Fig. 1a, b). Anteriorly, the prostomium is mounted atop a prominent forward extension of the peristomium, which gives a distinctly rounded, prow-like appearance to the peristomial region when viewed from above. This peristomial projection is produced laterally and ventrally into thick fleshy lips which sweep down to enclose the buccal opening, which in this form consists of a closed longitudinal slit. In ventral aspect, a swollen mound of peristomial tissue juts out from the mouth much like a proboscis; this mound is confluent with the roof of the mouth and the thick peristomial lips just described. A kodachrome of a living specimen kindly provided by Mr. Wobber indicates that this peristomial structure is not an artifact of preservation. Four subdermal eyes are arranged trapezoidally, the anteriormost pair the further apart.

The palps are short and thick with the median groove bordered on either side by thick ridges, distinctly marked with small blotches of dark-brown (Fig. 1b). A dark W-shaped haemal loop can be seen on either side through the translucent tissues of the peristomial lateral cephalic lobes.

There are no notosetae on the first setiger. The postsetal notopodial lamellae are well developed on setigers 1-4, and from the sixth, almost to the end. Neuropodial lamellae are well developed on setigers 1 and 2, reduced on 3, and almost lacking on 4 (Fig. 1a); they are completely

absent thereafter. With the exception of the modified spines and companion setae of setiger 5 and the hooded hooks, the setae all consist of limbate forms in both rami of the parapodia of the type commonly found in this genus (Mesnil, 1896, Pl. 12, Figs. 5, 6); posteriorly, the notosetae form fine elongate capillaries which have the barest trace of a limbate tip (Mesnil, 1896, Pl. 12, Fig. 8). Prominent transverse ciliary bands are present over the dorsum of all setigers, except 5 and 6.

The fifth setiger is heavily modified and distinctly folded dorso-laterally. A large ridge extends across the dorsum and passes down on each side to enclose the major spine series (Fig. 1a). The modified major spines, themselves, are slightly falcate structures, 8-9 in a series, with a slight lateral flange forming a concavity subdistally (Fig. 2b, d). These spines, especially the older and more weathered ones (Fig. 2c) resemble those of *Polydora cavitensis* Pillai (1965, Fig. 17-D) and a recently described form found in some eastern Pacific hydrocorals of the genus *Allopora* (Light, in press). The companion setae are lanceolate and project beyond the tips of the major spines. Two very minute fascicles are present both dorsal and ventral to the major spine series, both bearing limbate setae.

Branchiae begin on setiger 7 and are fully developed from that setiger almost to the end, where they become quite reduced (Fig. 1c). From setiger 12 in both the holotype and the one complete paratype, prominent webs of connecting tissue extend between the gills (Fig. 1c), and only the distal portion of the branchiae project freely from these septa. These septa are generally longer than the intervening inter-branchial spaces so that they tend to be folded or pleated in the median segments. This webbing is a highly unusual feature among the polydorids and appears to be of diagnostic significance.

Hooded neuropodial crotchets (Fig. 2a) begin on setiger 7, and number 6 per series. They increase in number over the next few somites to 11-12 per ramus; this may persist over a number of segments, but the count gradually decreases posteriorly, until there are but 2-3 in each series over the last few segments. The beak forms a more or less acute angle back against the main shaft, and a distinct manubrial swelling is present. These crotchets are quite similar to those of *Polydora cavitensis* as well as those of the hydrocoral-dwelling species from the eastern Pacific; to a lesser extent they also resemble those of *Polydora hornelli* Willey from India and Ceylon and *P. pacifica* Takahashi from Palau Island (Light, in press).

Very faint mid-ventral blotches can be seen in the median segments of *P. wobberi*. These dark-brown markings are reminiscent of the

“butterfly” or “fleur-de-lis” pattern seen in the *Allopora*-dwelling species from California. Color in alcohol: opaque white; living animals are of a more fleshy hue.

The body is distinctly flattened dorso-ventrally and sharply attenuated over the last few posterior segments. It is very similar in appearance to the caudal region of *Boccardia hamata* (Webster) Blake (1966), but there is no trace of the large, curved posterior notopodial “boat-hooks.” The pygidium is extremely reduced and consists of a thickened ring surrounding the anal opening (Fig. 1c).

#### DISCUSSION

*Polydora wobberi* appears to be most closely related to *P. cavitensis* from the Philippine Islands, and to a new species found in hydrocorals ranging from central California at least as far north as the southern portion of Vancouver Island (*Polydora* sp. n., Light, in press). These three species are to a lesser extent also related to *P. hornelli* and *P. pacifica*. *Polydora wobberi* may be distinguished from the other four species by the unique forward projection of the peristomium, the presence of interbranchial septa, and the extremely reduced pygidium.

Within the more closely related group, *P. cavitensis* differs from *P. wobberi* in having a caruncle which extends to the posterior margin of setiger 3 and in bearing a distinct occipital cirrus. The *Allopora*-dwelling polydorid from California differs from *P. wobberi* in having but one pair of eyes and a dorsally corrugated caruncle which extends to the anterior border of setiger 5, and in exhibiting a prominent sheath overlying the prostomium, formed by a forward extension of the caruncle. The prostomium is also anteriorly entire in the California species; in all the other forms mentioned, including *P. wobberi*, the prostomium is anteriorly notched, and there is no overlying sheath.

The pygidium of *P. cavitensis* consists of a fleshy triangular-shaped pad (Pillai, 1965, Fig. 17-G); in the hydrocoral-dwelling species it forms a thick flat disk which is densely studded with minute papillae on its posterior surface.

*Polydora wobberi*, *P. cavitensis* and the California species all differ from *P. hornelli* and *P. pacifica*, in that their modified fifth setiger spines lack the subdistal constriction or “neck” found in *P. hornelli*, and the lateral spur found in *P. pacifica*.

*Polydora wobberi* attains a length of 27 mm, and in size more closely resembles *P. cavitensis* (15 mm) and *P. hornelli* (31 mm over 92 segments). The hydrocoral-burrowing polydorid and *P. pacifica* are both considerably larger, reaching 75 mm and 85 mm, respectively.

Like the hydrocoral-living form, *P. wobberi* may be an obligate commensal within a coelenterate host, in this case, a gorgonacean. It is more specialized than the species discussed above by virtue of the configuration of the peristomium, the interbranchial septa and the reduced pygidium. It causes more structural damage to the coelenterate colony than does the species from California and the woody central "stems" of the *Lophogorgia* are entirely missing in infected branches; the limited data available suggest that neither species seems to seriously affect the overall well-being of its hosts.

*Polydora wobberi* was found inhabiting narrow U-shaped burrows which open to the exterior at the tips of short stubby branches of the gorgonian which are about 20-30 cm in length. These short branches usually arise within 5-10 cm of the basal holdfast of the gorgonian colony; the longer, uninfected branches may reach 70 cm in height (Wobber, personal communication). There may be from 10-16 spionids per host colony, all of which seem to occupy individual burrows. In one burrow from the type lot, egg cocoons were found adhering to the tube wall by fine mucus strands. The largest cocoon measured 7.5 mm in length and comprised one large chamber, tightly packed with many granular eggs; such a size is unusual for polydorid egg cases.

#### ACKNOWLEDGMENTS

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